

compound reservoir mounted on the frame, intermediate the ends, with aligned slots through the lower edge of the wall with a source of tape mounted on the other end of the frame with the tape passing through the slots in the compound container for picking up taping compound on the surface thereof and passing over the roller for application and pressing by the press wheel into a joint between adjacent wallboard panels.

U.S. Pat. No. 4,516,868, to Molnar, discloses a device designed to apply a layer of joint compound over an already installed length of tape.

U.S. Pat. No. 4,592,797, to Carlson, discloses a tube including a cylindrical roller for applying pressure to embed a tape in adhesive, the roller being designed to allow the mud which is on the underside of the tape to flow over the top of the tape and coat that surface as well.

U.S. Pat. No. 4,608,116, to Braselton, discloses a baseboard edge taping tool which includes a severing knife and which is specifically designed to enable cutting operations at a corner.

Other references relating to tape dispensing and mastic dispensing include U.S. Pat. No. 2,972,428, to Dubbs, which discloses a tape applicator including microswitch controls for advancing, severing and applying a pressure sensitive tape. Movements of the tape are controlled incrementally on a cyclicable basis.

U.S. Pat. No. 3,785,535, to Ames, discloses a mastic supply pump outlet for filling different types of mastic-applying tools.

U.S. Pat. No. 4,406,247, to Baughman et al., discloses control of the flow of adhesive in an adhesive dispensing system wherein a logic control unit receives signals indicative of various process conditions and in response thereto controls adhesive dispensing.

U.S. Pat. No. 4,477,304, to Westermann, discloses a tool designed to apply a predetermined quantity of adhesive on a workpiece.

U.S. Pat. No. 4,584,047, to Vanderpool, et al., discloses a hand-held labeling device which senses the position of the web of labels and controls other operation in response to this sensed condition.

Despite the great efforts which have been applied to reduce the labor and time involved in wallboard finishing, there is still a marked need for an efficient and useful tool and compositions therefore which will allow a one-step finishing of wallboard.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide an apparatus, process, and composition for wallboard finishing which requires only a single step.

As will become readily apparent hereinafter, the above object of the invention is achieved by the provision of an apparatus, process, and compositions for the taping of joints between pieces of wallboard. The composition of the present invention comprises from about 35 to 60% by weight of a gypsum base plaster, 30-70% by weight of an alcohol-water mixture, 0 to 5% by weight of polyvinyl alcohol, and 10-25% by weight of polyvinyl acetate.

In a preferred embodiment, the gypsum base plaster comprises from about 40-70, more preferably 45-60, most preferably 55% by weight of calcium sulfate, up to 10%, most preferably 6.5% by weight of calcium carbonate, up to 5%, more preferably about 2% by weight of silica sand, up to 6, most preferably about 4% by weight of starch, small amounts of conventional drying

accelerators for the gypsum base plaster, 0-10% by weight of talc and 0-10% by weight of mica. The total amount of talc plus mica constituting from about 4-20% by weight.

The wetting agent used in the composition of the present invention preferably comprises a non-toxic alcohol-water mixture. In a preferred embodiment, the composition of the present invention comprises 30-70, more preferably 37-56, most preferably 42% by weight of an alcohol-water mixture. The alcohol-water mixture may contain from about 0 to 30% by weight of water. The alcohol used in the wetting agent can comprise methyl, ethyl, and propyl alcohols. Preferably, the alcohol comprises commercially denatured ethyl alcohol.

Preferably, the composition of the present invention contains from about 0 to 5% of polyvinyl alcohol, preferably about 1%.

The composition of the present invention contains an adhesive material which preferably comprises a polyvinyl acetate in an amount of from about 10 to 25, most preferably 14% by weight.

Applicant discovered that upon application to a surface of a conventional plaster containing polyvinyl chloride and water as the wetting agent, the polyvinyl chloride quickly forms an outer skin through which the water must migrate in order for the plaster to completely dry and harden. As a consequence, it becomes necessary in construction projects to maintain an ambient temperature of at least 55° F. in the room where the plaster is to be applied. The cost of heaters, fuel, and labor to maintain this temperature adds significantly to the cost of construction. Applicant unexpectedly discovered that when a plaster comprises a gypsum base, an alcohol-water wetting agent, and polyvinyl acetate, the wetting agent migrates much faster through the skin formed on the polyvinyl acetate, than the water which migrates through the skin on polyvinyl chloride in conventional gypsum plasters. This accelerated drying rate of the composition of the present invention was unexpectedly found to be unaffected by temperature over a relatively wide range. For example, the composition of the present invention can be applied satisfactorily at temperatures of from about 10°-120° F.

It was also unexpectedly discovered that the dried composition of the present invention absorbs conventional paints, including both water and oil base paints, at a rate approximating the absorption rate of the paper used on the outer surface of conventional drywall. As a result, satisfactory painting of the surface of a wall finished with the composition of the present invention can be accomplished with only one coat of paint, thus eliminating the need for a primer and a second top coat.

In addition, applicant has found that the apparatus described herein can be satisfactorily cleaned with a cleaning solvent comprising an aqueous mixture of zinc chloride, optionally containing a minor amount of alcohol. The compositions of the present inventions can be used in a process comprising the substantially simultaneous steps of: (a) applying a first layer of the joint compound to a joint between pieces of wallboard, the first layer of the joint compound having a first predetermined width, the first layer of the joint compound being substantially centered, widthwise, on the joint; (b) embedding a wallboard tape in the first layer of the joint compound, the wallboard tape having a width substantially equal to the first predetermined width, the wallboard tape being substantially centered, widthwise, on the joint; (c) overcoating the embedded wallboard tape